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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/811,078	03/26/2004	Toshiaki Kakutani	MIPFP083	8066

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EXAMINER	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/811,078	KAKUTANI, TOSHIAKI	
	Examiner	Art Unit	
	QUANG N. VO	2625	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *25 July 2008*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-8,16,17,20 and 23* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-4,16,20 and 23* is/are rejected.

7)☒ Claim(s) *5-8 and 17* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 07/25/2008 has been entered.

Response to Arguments

Applicant's arguments with respect to claims 1-8, 16, 17, 20 and 23 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-3, 16, 20 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shimizu et al. (Shimizu) (US 2003/0112293) in view of Otsuki (US 6,652,067).

With regard to claim 1, Shimizu discloses an image output control system (e.g., figure 2, paragraph 0045) comprising an image processing device (e.g., a control/operation portion 13, paragraph 0045) that makes image data subjected to a preset series of image processing (e.g., different preset series of image processing

disclosed in paragraph 0048), and an image output device (e.g., printer 22, figure 3) that creates multiple different types of dots having different densities per unit area according to a result of the preset series of image processing (paragraph 0068), so as to output an image, image processing device comprising: a dot number determination module (e.g., the hardware/software associated with the control/operation 13 portion that performs the function disclosed in paragraph 0071) that determines a number of dots to be created in each pixel group, which is set to have a predetermined number of multiple pixels included in the image, with respect to each of the multiple different types of dots according to the image data (e.g., figures 9 and 10, paragraph 0068); and a number data output module that outputs (e.g., the program of the control/operation portion 13 that perform the function disclosed, paragraph 0071) the determined number of dots to be created in the pixel group with respect to each type of dot, as dot number data of the pixel group (e.g., the kind of dot for at least one color is different from the kinds of dot for other colors, paragraphs 0015, 0072, 0073), to image output device (e.g., a printing system, figure 2).

Shimizu differs from claim 1, in that he does not explicitly teach image output device comprising: a number data receiving module that receives the dot number data of the pixel group with respect to each type of dot; a priority order specification module that specifies a priority order of individual pixels in the pixel group for dot creation; a pixel position determination module that determines positions of dot-on pixels in the pixel group with respect to each type of dot, based on the dot number data of the pixel group with respect to each type of dot and the specified priority order; and a dot

formation module that creates the multiple different types of dots at the determined positions of the dot-on pixels.

Otsuki discloses image output device (e.g., figure 2) comprising: a number data receiving module (e.g., buffer 42A, 42B, column 3, lines 6-12) that receives the dot number data of the pixel group with respect to each type of dot (e.g., control unit 45 processes to develop dot data representing dot recording status for each pixel referencing font data and graphics functions in ROM 43, column 3, lines 9-12); a priority order specification module that specifies a priority order of individual pixels in the pixel group for dot creation (e.g., the hardware/software that perform the function disclosed in column 5, lines 50-60); a pixel position determination module (e.g., the hardware/software associated with the masking signal generation circuit 334 that perform the function disclosed in column 5, line 61 – column 6, line 21) that determines positions of dot-on pixels in the pixel group with respect to each type of dot, based on the dot number data of the pixel group with respect to each type of dot and the specified priority order (e.g., the hardware/software associated with the masking signal generation circuit 334 that perform the function disclosed in column 5, line 61 – column 6, line 21); and a dot formation module (e.g., the hardware/software associated with print head (module 50, figure 1) that perform the function disclosed in column 7, lines 1-7) that creates the multiple different types of dots at the determined positions of the dot-on pixels (e.g., figures 10A-10D).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to have modified Shimizu to include image output device comprising: a

number data receiving module that receives the dot number data of the pixel group with respect to each type of dot; a priority order specification module that specifies a priority order of individual pixels in the pixel group for dot creation; a pixel position determination module that determines positions of dot-on pixels in the pixel group with respect to each type of dot, based on the dot number data of the pixel group with respect to each type of dot and the specified priority order; and a dot formation module that creates the multiple different types of dots at the determined positions of the dot-on pixels as taught by Otsuki. It would have been obvious to one of ordinary skill in the art at the time of the invention to have modified Shimizu by the teaching of Otsuki to be able to print different type of dots at different density and increase printing speed.

With regard to claim 2, Shimizu differs from claim 2 in that he does not disclose wherein priority order specification module selects one out of multiple options for the priority order, which are provided in advance, with respect to the pixel group.

Otsuki discloses wherein priority order specification module selects one out of multiple options for the priority order, which are provided in advance, with respect to the pixel group (e.g., figures 10A-F, column 7, lines 1-27).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to have modified Shimizu to include priority order specification module selects one out of multiple options for the priority order, which are provided in advance, with respect to the pixel group as taught by Otsuki. It would have been obvious to one of ordinary skill in the art at the time of the invention to have modified Shimizu by the

teaching of Otsuki to be able to print different type of dots at different density and increase printing speed.

With regard to claim 3, Shimizu differs from claim 3 in that he does not disclose wherein number data output module has a dot number combination mapping table that maps each combination of numbers of the multiple different types of dots to a preset code, number data output module refers to the dot number combination mapping table to convert a combination of the numbers of the respective types of dots determined with respect to the pixel group to a corresponding preset code and outputs the preset code, in place of the dot number data of the pixel group, to image output device, and number data receiving module comprises: a code mapping table that maps each preset code to a combination of the numbers of the multiple different types of dots; and a number data conversion module that receives the output preset code of the pixel group, and refers to the code mapping table to reconvert the received preset code to dot number data of the pixel group with respect to each type of dot.

Otsuki discloses wherein number data output module has a dot number combination mapping table (e.g., figure 10E) that maps each combination of numbers of the multiple different types of dots (e.g., figures 10A-10D) to a preset code (e.g., MPS code in figure 10E, column 7, lines 1-16), number data output module refers to the dot number combination mapping table (e.g., figure 10E) to convert a combination of the numbers of the respective types of dots (e.g., dot types selection data (A-1)-(A-4), ...(D-1)-(D-4), figure 10F, column 7, lines 17-27) determined with respect to the pixel group (e.g., dot type selection data 00, 01, 10, 11 figure 10F, column 7, lines 17-27) to a

corresponding preset code (e.g., MPS code in figure 10E, column 7, lines 1-16) and outputs the preset code (e.g., MPS code, figures 7A-7B), in place of the dot number data of the pixel group (e.g., Cell (T21, T22...), figure 10F), to image output device (column 7, lines 36-38), and number data receiving module (e.g., the ejection drive elements PZT, column 5, lines 50-52) comprises: a code mapping table (e.g., figures 10E and 10F) that maps each preset code to a combination of the numbers of the multiple different types of dots; and a number data conversion module (e.g., the hardware/software that perform the function disclosed in column 7, lines 17-27) that receives the output preset code of the pixel group, and refers to the code mapping table to reconvert the received preset code to dot number data of the pixel group with respect to each type of dot (e.g., figure 10F).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to have modified Shimizu to include wherein number data output module has a dot number combination mapping table that maps each combination of numbers of the multiple different types of dots to a preset code, number data output module refers to the dot number combination mapping table to convert a combination of the numbers of the respective types of dots determined with respect to the pixel group to a corresponding preset code and outputs the preset code, in place of the dot number data of the pixel group, to image output device, and number data receiving module comprises: a code mapping table that maps each preset code to a combination of the numbers of the multiple different types of dots; and a number data conversion module that receives the output preset code of the pixel group, and refers to the code mapping

table to reconvert the received preset code to dot number data of the pixel group with respect to each type of dot as taught by Otsuki. It would have been obvious to one of ordinary skill in the art at the time of the invention to have modified Shimizu by the teaching of Otsuki to be able to print different type of dots at different density and increase printing speed.

Referring to claim 16:

Claim 16 is the method claim corresponding to operation of the device in claim 1 with method steps corresponding directly to the function of device elements in claim 1. Therefore claim 16 is rejected as set forth above for claim 1.

Referring to claim 20:

Claim 20 is the computer program product storing computer instructions claim corresponding to operation of the device in claim 1 with instruction steps corresponding directly to the function of device elements in claim 1. Therefore claim 20 is rejected as set forth above for claim 1.

With regard to claim 23, the subject matter is similar to claim 1. Therefore claim 23 is rejected as set forth above for claim 1.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shimizu et al. (Shimizu) (US 2003/0112293) and Otsuki (6,652,067) as applied to claim 1 above, and further in view of Shimada et al. (Shimada) (US 6,293,643).

With regard to claim 4, Shimizu and Otsuki combined, differ from claim 4 in that the do not explicitly disclose wherein pixel position determination module sequentially determines the positions of the dot-on pixels with respect to each type of dot in a descending order of the density per unit area of the multiple different types of dots.

Shimada discloses wherein pixel position determination module sequentially determines the positions of the dot-on pixels with respect to each type of dot in a descending order of the density per unit area of the multiple different types of dots (e.g., steps S350-S500, figure 12).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to have modified Shimizu and Otsuki combined, to include wherein pixel position determination module sequentially determines the positions of the dot-on pixels with respect to each type of dot in a descending order of the density per unit area of the multiple different types of dots as taught by Shimada. It would have been obvious to one of ordinary skill in the art at the time of the invention to have modified Shimizu and Otsuki combined by the teaching of Shimada to have better image quality.

Allowable Subject Matter

Claims 5-8 and 17 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter:

Regarding claim 5, the image output control system in according with claim 1, a first dot number determination module that compares the first dot density data with the threshold values included in the threshold value group and sets a number of threshold values that are smaller than the first dot density data to a number of the first dots to be created in the pixel group; and a second dot number determination module that compares the second dot density data with the threshold values included in the threshold value group and sets a number of the second dots to be created in the pixel group, based on the preset number of the first dots and a number of threshold values that are smaller than the second dot density data, second dot number determination module comparing the second dot density data with only threshold values that are greater than the first dot density data and counting the number of the threshold values that are smaller than the second dot density data, so as to set the number of the second dots to be created in the pixel group. Shimada et al. (US 6,293,643), teaches a similar method for recording image data, either singularly or in combination with cited references, fail to anticipate or render the above underline limitations obvious (to use in combination with other claimed limitations).

Claims 6-8 depend on claim 5.

Referring to claim 17:

Claim 17 is the method claim corresponding to operation of the device in claim 5 with method steps corresponding directly to the function of device elements in claim 5. Therefore claim 17 has the same reasons for the indication of allowable subject matter.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to QUANG N. VO whose telephone number is (571)270-1121. The examiner can normally be reached on 7:30AM-5:00PM Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, King Y. Poon can be reached on 5712727440. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Quang N. Vo/
Examiner, Art Unit 2625

/David K Moore/
Supervisory Patent Examiner, Art Unit 2625